

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 36

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YASUNORI UETANI, YASUNORI DOI, KAZUHIKO HASHIMOTO,
HARUYOSHI OSAKI and RYOTARU HANAWA

Appeal No. 1997-2593
Application No. 08/160,290

HEARD: October 23, 2000

Before JOHN D. SMITH, LIEBERMAN, and TIMM, Administrative
Patent Judges.

JOHN D. SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal pursuant to 35 U.S.C. § 134 from the final rejection of claims 1, 7, 10, 14, 18, 22, and 23.

In light of appellants' "Grouping of Claims" in the brief at page 4, we reproduce appealed claims 1 and 10 below which are representative of the two groups of appealed claims for which appellants seek separate consideration:

Appeal No. 1997-2593
Application No. 08/160,290

1. A positive resist composition comprising, in admixture, an alkali-soluble novolak resin, an ester of a hydroxyl group containing compound with a quinone diazide sulfonic acid, and a mixed solvent consisting essentially of:

(B) at least one organic solvent selected from the group consisting of (-butyrolactone and 3-methoxybutanol; and

(A) an organic solvent other than solvent (B) having a molecular structure which does not have simultaneously an alkylcarbonyl group and an alkoxy group therein and having a boiling point of from 140 to 180E C under atmospheric pressure, wherein a weight ratio of said organic solvent (A) to said organic solvent (B) is from 95:5 to 40:60.

10. The positive resist composition according to claim 1, wherein said solvent (B) is (-butyrolactone.

The references of record relied upon by the examiner are:

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| Uetani et al. (Uetani) | 5,059,507 | Oct. 22, |
| 1991 | | |
| Liu | 5,246,818 | Sep. 21, |
| 1993 | | |

Appealed claims 1, 7, 10, and 23 stand rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as unpatentable over Liu. All appealed claims stand rejected under 35 U.S.C. § 103 as unpatentable over Uetani in view of Liu.

Appeal No. 1997-2593
Application No. 08/160,290

We affirm.

The subject matter on appeal is directed to a positive resist composition which comprises an alkali-soluble novolak resin, a quinone diazide compound, and a solvent blend mixture which "consists essentially of" certain organic solvents (A) and (B), as defined in the appealed claims. For example, organic solvent (A) may be diacetone alcohol and organic solvent (B) may be (-butyrolactone. See appealed claims 1, 10, and 23. Further, for the herein claimed composition, the weight ratio of organic solvent (A) to organic solvent (B) is from 95:5 to 40:60.

The examiner's prior art rejections of the appealed claims are primarily based on disclosures in Liu. This prior art patent is directed to, inter alia, photographic elements comprising certain positive working photosensitive coatings applied to substrates to form a "color proofing film". See Liu at column 1, lines 6-24. Liu's photosensitive coating compositions are comprised of, inter alia, a quinone diazide photosensitizer (preferably the ester of bis-(3 benzoyl-4,5,6 trihydroxyphenyl)-methane and 2-diazo-1-naphthol-5-sulfonic acid); a binder resin (preferably aqueous alkaline soluble

Appeal No. 1997-2593
Application No. 08/160,290

novalaks); and compatible residual coating solvents such as (-butyrolactone and diacetone alcohol. See the respective disclosures of Liu at column 4, lines 3-12; column 4, lines 12-21; and column 5, lines 3-7. Significantly, as emphasized by the examiner in his answer, Liu further exemplifies photosensitive coating compositions comprised of solvent blend mixtures including diacetone alcohol and (-butyrolactone in weight ratio of 42:58. See the "Black" formulation described at column 5, lines 25-42 of Liu.

Apparently, based on the disclosure of the "black color formulation" described at column 5, lines 25-42 of Liu, appealed claims 1, 7, 10, and 23 were rejected as "anticipated" by Liu. See the answer at page 4. However, Liu's specific "black color formulation" utilizes a polyvinyl acetal/alcohol/acetate resin, not a novolak resin, as required by the appealed claims, and accordingly, appellants correctly point out that Liu "fails to disclose any specific example of an embodiment falling within the scope of the claims of the present application" (brief, page 9). Moreover, even the examiner acknowledges (answer, page 4) that "[a] clear-cut 35 U.S.C. § 102 rejection may not apply" because excessive

Appeal No. 1997-2593
Application No. 08/160,290

"picking and choosing may be required to meet certain claim embodiments", and we think that this is the case here.

Accordingly, we do not sustain the examiner's "anticipation" rejection. We hasten to add that we agree with the examiner that the relevant prior art disclosures in Liu referred to above establish a prima facie case of obviousness for the subject matter defined by appealed claims 1 and 10 which has not been rebutted by objective evidence of nonobviousness. Hence, we sustain the examiner's alternatively stated 35 U.S.C. § 103 rejection based on Liu.

In traversing the examiner's rejections of the appealed claims, appellants assert that Liu fails to disclose "a positive resist composition" as recited in the preamble of the appealed claims. See the brief at page 11. Liu clearly indicates that the prior art photosensitive coating composition is "positive working". However, appellants apparently believe that because Liu's composition is used in the production of a color proofing film whereas appellants' composition is ultimately used in the field of integrated circuits, the preambular claim language serves to distinguish the claimed composition from that of Liu's. We find, however,

Appeal No. 1997-2593
Application No. 08/160,290

that the claim language in question, "a positive resist composition", at best, merely sets forth an intended future use of appellants' composition, and thus does not distinguish the claimed composition from the positive acting photosensitive composition disclosed by Liu. See In re Pearson, 494 F.2d 1399, 1403, 181 USPQ 641, 644 (CCPA 1974).

Appellants further argue that the "main" components of Liu's exemplified "(-butyrolactone and diacetone alcohol solvent blend" are propylene glycol monomethyl ether and methyl ethyl ketone, and that the latter two solvents are excluded from the claimed solvent blend component of appellants' composition by the "consisting essentially of" language. However, the examiner correctly points out that the claim language "consisting essentially of" limits the scope of appellants' solvent blend to the specified solvents and those that do not materially affect the novel and basic characteristics of the solvent blend. Here, appellants have presented no objective evidence that the "main" solvents of Liu's solvent blend would materially affect the basic and novel characteristics of the claimed solvent blend when added thereto. See In re Herz, 537 F.2d 549, 551-52, 190 USPQ 461,

463 (CCPA 1976). Indeed, appellants' specification indicates that their composition may contain other solvents such as methyl ethyl ketone. See the specification at page 10, lines 8-13. Moreover, appellants have cited no controlling legal authority, and we know of none, which holds that the claim language "consisting essentially of" operates to exclude "main" components which otherwise do not materially affect the novel and basic characteristics of a composition. Here, appellants have provided no objective evidence showing that the amounts of these "main" solvents in Liu's solvent blend would materially affect the basic characteristics of appellants' composition.

Appellants' counsel emphasizes in the brief that the use of the recited mixed solvent blend in the claimed composition results in "unexpected advantageous properties" with regard to depth of focus, profile and resolution properties. Such properties are said to be significant when appellants' composition is used as a positive resist in the production of integrated circuits with a high integration level. See the brief at pages 8 and 9. Comparative experimental test results are shown in the Table at pages 13-18 of appellants'

specification. However, none of the comparative examples (specification, page 18) involve the use of solvent blends, much less the specifically described prior art solvents blends of Liu. Thus, appellants' have made no comparisons with the closest prior art compositions.

In light of the above, we agree with the examiner that the subject matter defined by appealed claims 1 and 10 would have been obvious within the meaning of 35 U.S.C. § 103. Thus, we sustain the examiner's obviousness rejection based on Liu. Essentially for the reasons set forth in the answer, we also sustain the examiner's rejection of the appealed claims based on the combined teachings of Uetani and Liu. Basically, we agree with the examiner that based on the relevant disclosures in Liu, "[t]he skilled artisan would have found it prima facie obvious to utilize the solvent mixture disclosed therein [in Liu] in the photoresist composition of Uetani et al. [Uetani] with a reasonable expectation of achieving the same or similar results since the solvents in each reference are being utilized in a quinine diazide/alkali soluble resin containing composition" that is to be applied to

Appeal No. 1997-2593
Application No. 08/160,290

substrates as positive working photosensitive coatings. See the answer at page 6. Thus, prior to exposure and development, Uetani's positive photoresist composition is also applied to a substrate, e.g. a silicon wafer, where the solvent evaporates at a suitable drying rate to give a uniform and smooth coating film. See Uetani at column 4, lines 7-17 and column 6, lines 4-7. Again, none of the comparative examples reported in appellants' experimental test results (specification, page 18) involve the use of the specifically exemplified solvent of Uetani, i.e., ethyl cellosolve acetate. See Uetani at column 6, lines 6 and 7. Further, we point out that Uetani's compositions, like appellants' compositions, are said to provide excellent resolution. See Uetani at column 1, lines 29-35. Thus, we agree with the examiner that the subject matter defined by appealed claims 1 and 10 would have been obvious within the meaning of 35 U.S.C. § 103 in view of the combined disclosures of Uetani and Liu. Accordingly, we also sustain the examiner's rejection of the appealed claims for obviousness based on Uetani and Liu.

Appeal No. 1997-2593
Application No. 08/160,290

As evident from our comments above, and based on appellants' groupings of the claims in the brief at page 4, we have decided this appeal based on representative claims 1 and 10. See 37 CFR § 1.192(c)(7) 1995. Based on arguments made by appellants' counsel at the oral hearing that neither of the applied references disclose certain specific solvent components set forth in some of the more limited appealed claims, we point out that appellants have made no factual challenge to the examiner's finding that such solvents are "well known interchangeable solvents within the same boiling point characteristic range that have been utilized in this type of composition in the past." See the answer at page 7. In the event of any further prosecution of this application, for example in a continuation application, appellants may desire to address the examiner's above findings so that the issue of obviousness as to the more limited claims may be properly joined.

The decision of the examiner is affirmed.

Appeal No. 1997-2593
Application No. 08/160,290

No period for taking any subsequent action in connection
with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

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| JOHN D. SMITH |) | |
| Administrative Patent Judge |) | |
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| |) | BOARD OF PATENT |
| PAUL LIEBERMAN |) | APPEALS |
| Administrative Patent Judge |) | AND |
| |) | INTERFERENCES |
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| CATHERINE TIMM |) | |
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Appeal No. 1997-2593
Application No. 08/160,290

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Appeal No. 1997-2593
Application No. 08/160,290

APJ JOHN D. SMITH

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AFFIRMED

Prepared: June 19, 2002